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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,987	09/17/2003	Roland Rathgeber	265-153	1962
23117	7590	10/13/2004	EXAMINER HAM, SEUNGSOOK	
NIXON & VANDERHYE, PC 1100 N GLEBE ROAD 8TH FLOOR ARLINGTON, VA 22201-4714			ART UNIT 2817	PAPER NUMBER

DATE MAILED: 10/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/663,987	RATHGEBER ET AL.	
	Examiner	Art Unit	
	Seungsook Ham	2817	<i>AW</i>

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2003.
2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-9 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 17 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>9/17/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the subject matter of claims 3, 7 and 9 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The abstract of the disclosure is objected to because "(Figure 1)" should be deleted. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, lines 6 and 9, "one resonator" is confusing as to which resonator refers to;

lines 6 and 9, "the transmission path" and "the reception path" lack antecedent basis;

lines 12 and 13, "at least two additional resonators at least one of which..." cannot be understood;

line 15, "a common signal path" is confusing as to whether it refers to "a common signal path" in line 14 or not;

line 18, "at least two additional resonators" is confusing as to whether it refers to "at least two additional resonators" in line 12;

lines 22-23, "the at least one further resonator" lacks antecedent basis.

In claim 2, lines 5 and 6, "at least two additional resonators" are confusing as to whether it refers to "at least two additional resonators" recited in claim 1;

lines 10 and 11, "the first resonator" lacks antecedent basis; and
the subject matter recited in lines 5-12 appears to be redundant since the same subject matter is already recited in claim 1, lines 18-24.

In claim 3, "the inner conductors" lacks antecedent basis.

In claim 4, "**preferably** being arranged in two rows of n resonators each" is vague and indefinite as to whether applicant is positively claiming the "two rows of n resonators each."

In claim 5, "which are provided are fitted" is confusing.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:


A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 4, 5 and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Jang (US Pat. App.Pub. '559, insofar as understood).

Jang (fig. 25 and paragraph [0004]) discloses an RF diplexer having a total of $2n$ resonator, n =an natural odd integer, including: at least three connection sockets, a common signal path ANTENNA, a transmitting device Tx, a receiving device Rx; at least one resonator associated solely with the transmission path for inputting transmission signals (the first and second resonators that is directly connected to the connector Tx);

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at least one resonator associated solely with the reception path for outputting received signals (the first and second resonators that is directly connected to the connector Rx); at least two additional resonators which at least one of the resonators being provided with an input/output for feeding signals from a common signal path (the two resonators that is directly connected to the connector ANTENNA); the at least two additional resonators forming an interconnection resonator pair which are strongly coupled to one another (i.e., the at least two resonators are directly coupled to the connector ANTENNA, see fig. 25 “ IRIS or electric field probe antenna coupling”); both the transmission path and the reception path are coupled to the at least one further resonator for inputting/outputting from the common signal path – k(1,6); the three connection sockets are disposed on the same side of a housing (see fig. 26) and at least one resonator is a dielectric resonator.

Claims 1, 2, 4 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Radcliffe (US '078, insofar as understood).

Radcliffe (figs. 1-3) discloses an RF diplexer having a total of $2n$ resonator, n =an natural odd integer, including: at least three connection sockets, a common signal path 20, a transmitting device 28, a receiving device 29; at least one resonator associated solely with the transmission path for inputting transmission signals (the first and second resonators G, H that is directly coupled to the connector 28); at least one resonator associated solely with the reception path for outputting received signals (the first and second resonators that is directly connected to the connector 29); at least two additional resonators which at least one of the resonators being provided with an input/output for

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feeding signals from a common signal path A, I; the at least two additional resonators forming an interconnection resonator pair which are strongly coupled to one another (i.e., the at least two resonators A, I are directly coupled to the connector 20 by wire section 22a); both the transmission path and the reception path are coupled to the at least one further resonator for inputting/outputting from the common signal path (through iris 6); and at least one resonator has a coaxial configuration.

Claims 1, 2, 4 and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Hino (US '040, insofar as understood).

Hino (fig. 3) discloses an RF diplexer having a total of $2n$ resonators, n =an natural odd integer, including: at least three connections, a common signal path 14, a transmitting device 11, a receiving device 12; at least one resonator associated solely with the transmission path for inputting transmission signals 3A; at least one resonator associated solely with the reception path for outputting received signals 4C; at least two additional resonators which at least one of the resonators being provided with an input/output for feeding signals from a common signal path 3C, 4A; the at least two additional resonators forming an interconnection resonator pair which are strongly coupled to one another (i.e., the resonators 3C and 4A are inherently coupled to each other electromagnetically, see fig. 12); both the transmission path and the reception path are coupled to the at least one further resonator for inputting/outputting from the common signal path (through resonators 3B and 4B); and at least one resonator has a coaxial ceramic configuration 9, col. 1, line 15).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jang (US Pat. App.Pub. '559).

Jang is applied as above. Regarding the dielectric resonator made of ceramic is an obvious design choice since Jang teaches that the dielectric resonator has a high dielectric constant (paragraph [0002]) which ceramic has a high dielectric constant.

Regarding claims 6 and 9, it would have been obvious as a matter of design choice to use coaxial or stripline resonators in the duplexer of Jang since such resonators are well known in the art and requires only a routine skill in the art.

Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Radcliffe (US '078).

It would have been obvious as a matter of design choice to use dielectric or stripline resonators in the duplexer of Radcliffe since such resonators are well known in the art and requires only a routine skill in the art.

Claims 5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hino (US '040).

Providing a housing for duplexer and sockets for the terminal connections are considered as an obvious design modification since such techniques are well known in

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the art. Moreover, using a stripline resonator in the device of Radcliffe is considered as a matter of design choice since such resonator is well known in the art and requires only a routine skill in the art.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jang (US Pat. App.Pub. '559) in view of Zaki (US '102, insofar as understood).

Jang is applied as above. Jang does not show the distance between the resonators can be varied. However, it is well known in the art to adjust the coupling between the resonators by varying the distance/space between the resonators. Zaki (fig. 9) discloses the coupling between the resonators is adjusted by a space instead of using an iris (fig. 10). Therefore, it would have been obvious to one of ordinary skill in the art to vary the distance between the resonators in the device of Jang to obtain a desired coupling instead of iris as shown by Zaki (col. 4, lines 35-41).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Radcliffe (US '078) or Hino (US '040) in view of Jachowski (US '284, insofar as understood).

Radcliffe and Hino are applied as above. Radcliffe and Hino do not show the distance between the resonators can be varied. However, it is well known in the art to adjust the coupling between the resonators by varying the distance/space between the resonators. Jachowski (fig. 3) discloses the coupling between the resonators is adjusted by a space between the resonators. Therefore, it would have been obvious to one of ordinary skill in the art to vary the distance between the resonators in the device of Radcliffe or Hino to obtain a desired coupling instead of iris as shown by Jachowski (col. 3, lines 34-40) since both techniques are functionally equivalent.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Scott (US '058), Scott et al. (US '687) and Vangala (US '978) disclose an RF diplexer having a common antenna being directly coupled to a resonator; and

Wang (US 723) discloses a multiplexer having a central resonator coupled to a common antenna.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seungsook Ham whose telephone number is (571) 272-2405. The examiner can normally be reached on Monday-Thursday, 8:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571)-272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Seungsook Ham
Primary Examiner
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